Montana Teachers' Retirement System
Experience Study
July 1, 2008 - July 1, 2013

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EXHIBIT 11

Benefit Financing

- Basic Retirement Funding Equation

$$C + I = B + E$$

C = Contributions
I = Investment Income
B = Benefits Paid
E = Expenses (administration)

Experience Study

- Study compares what actually happened during the study period (7/1/2008 through 7/1/2013) with what was expected to happen.

- Assumption changes recommended if actual experience differs significantly from expected.
  - Board approved assumptions are utilized in future valuations of the system.

- Judgment required to extrapolate future experience from past experience.

Demographic Assumptions

- Assumptions Reviewed
  - Rates of Withdrawal
  - Rates of Pre-Retirement Mortality
  - Rates of Disability Retirement
  - Rates of Retirement
  - Rates of Post-Retirement Mortality
  - Rates of Salary Increase

- Actuarial Standard of Practice (ASOP) No. 35, *"Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations"*, which provides guidance to actuaries in selecting demographic assumptions for measuring obligations under defined benefit plans.

Key Findings

- Recommended Demographic Assumption Changes
  - Updated pre and post retirement mortality assumption
    - Recommend change in healthy mortality to the RP-2000 Healthy Annuitant Mortality Table for ages 50 and older and the RP-2000 Combined Mortality Table for ages less than 50 projected to 2018 using the BB projection scale, set back 4 years for males and set back 2 years for females.
    - Recommend change to the RP-2000 Disabled Mortality Table projected to 2018 using the BB projection scale, set forward 1 year for males and set forward 5 years for females to maintain consistency with health mortality assumptions

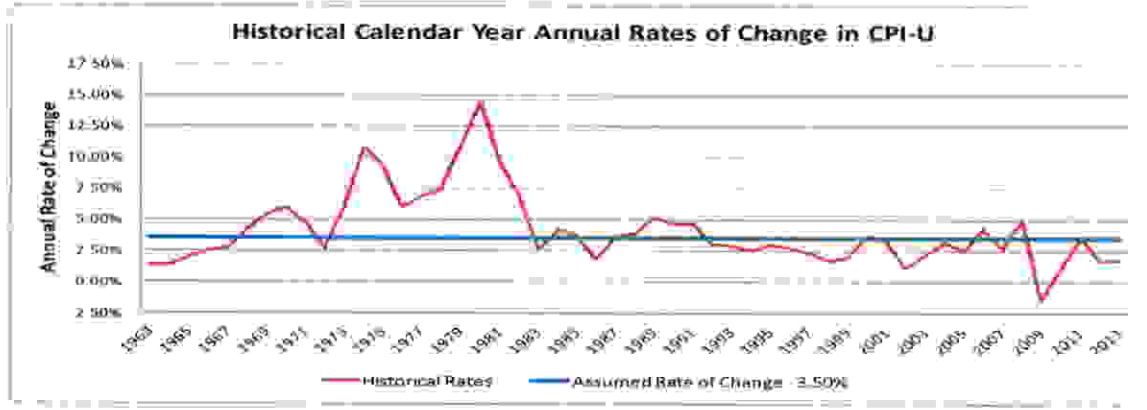
Economic Assumptions

- Assumptions reviewed
  - Price inflation
  - Investment return
  - Wage inflation
- Actuarial Standard of Practice (ASOP) No. 27, *"Selection of Economic Assumptions for Measuring Pension Obligations"* provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans.
- Recommendations

Item	Current	Proposed
Price Inflation	3.50%	3.25%
Real Rate of Return	4.25%	4.50%
Investment Return	7.75%	7.75%
Price Inflation	3.50%	3.25%
Real Wage Growth	1.00%	0.75%
Wage Inflation	4.50%	4.00%

Economic Assumptions
Price Inflation

- Current assumption: 3.50%
- Historical data: Annual CPI (U) Increases



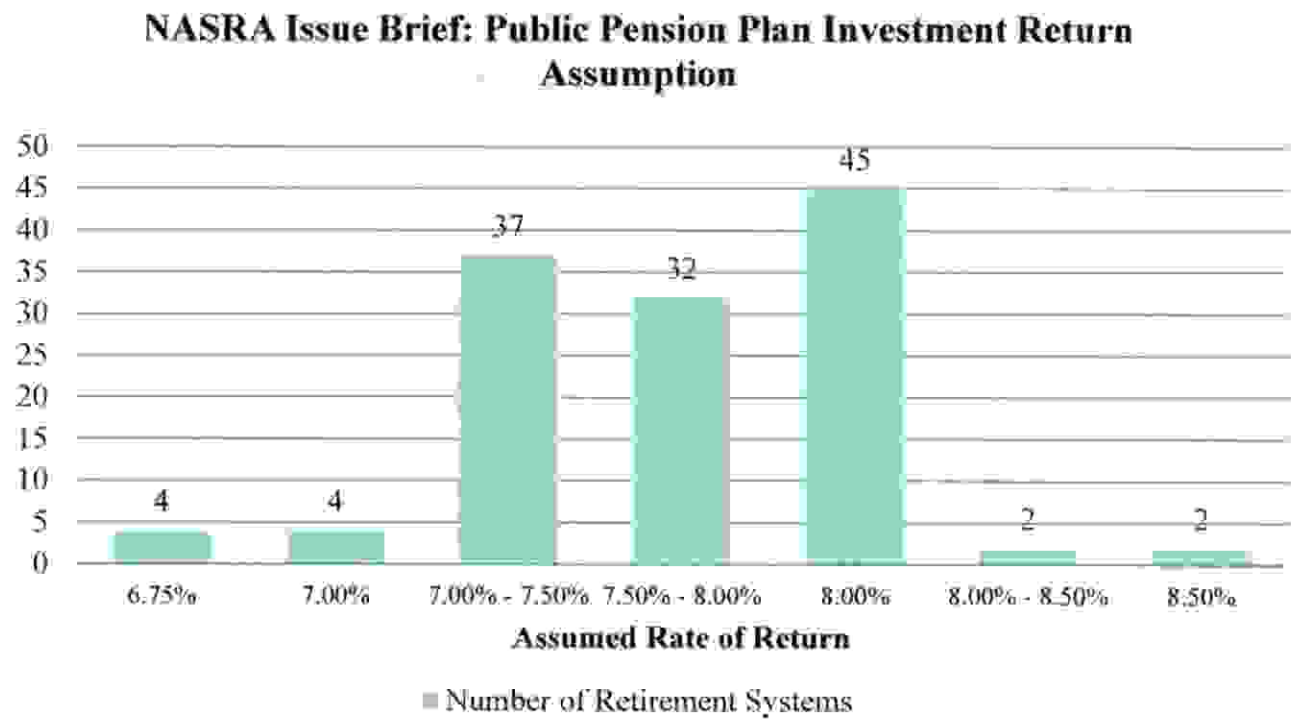
- Recommendation:

Price Inflation Assumption	
Current	3.50%
Reasonable Range	2.00% - 4.00%
Recommended	3.25%

Economic Assumptions
Investment Return

- Current Assumption
  - Price inflation 3.50%
  - Real rate of return 4.25%
  - Total return (net of investment and administrative expenses) 7.75%

Economic Assumptions
Investment Return



The average assumed rate of return among Public Retirement Systems is 7.72% according to the April 2014 NASRA Issue Brief: "Public Pension Plan Investment Return Assumptions"

Economic Assumptions
Investment Return

Time Span In Years	Real Returns by Portfolio Allocation Equities vs. Bonds			
	30%/70%	35%/65%	65%/35%	70%/30%
10	3.41%	3.61%	4.53%	4.64%
20	4.59	4.82	5.97	6.12
30	5.89	6.11	7.21	7.36
40	4.67	4.86	5.85	5.98
50	**3.98**	4.14	4.99	**5.11**

- Historical Analysis, combining 50 year real returns based on a portfolio consisting of 65% equities and 35% high quality intermediate-term government bonds combined with the proposed inflation rate of 3.25% yields an assumed rate of equal to 8.24%

Economic Assumptions
Investment Return

- Recommendation
  - ASOP No. 27 approach
  - Projection results – 50 years

Item	25th Percentile	50th Percentile	75th Percentile
Real Rate of Return	2.65%	3.90%	5.18%
Inflation	3.25%	3.25%	3.25%
Net Investment Return	5.90%	7.15%	8.43%

Economic Assumptions
Investment Return

- Normally would recommend 50th percentile results.
- However, there are mitigating issues:
  - Longer time horizon (10 years vs. System's lifetime)
  - Historical returns have been higher
  - Capital market assumptions do not include added return due to active management and other asset deployment strategies
  - Capital market assumptions are reflective of recent good experience. That, combined with the time horizon, causes them to be conservative compared to potential returns for longer periods.

Economic Assumptions
Investment Return

- Recommend no change to the assumed rate of return which is greater than the 50th percentile

Investment Return Assumption	
Current	7.75%
Reasonable Range	5.90% - 8.43%
Recommended*	7.75%

*Net of investment expenses only

Economic Assumptions
Wage Inflation

- Social Security 75 year projection of national wage growth assumption is 1.1% greater than price inflation.
- Recommendation

Wage Inflation Assumption		
Current	4.50%	
	Reasonable Range	
Real Wage Growth	0.50%	1.50%
Inflation	3.25%	3.25%
Total	3.75%	4.75%
Recommended	4.00%	

Key Findings

- Recommended Economic Assumption Changes

Item	Current	Proposed
Price Inflation	3.50%	3.25%
Investment Return	7.75%	7.75%
Wage Inflation	4.50%	4.00%

Key Findings

- Method Changes
  - Decreased payroll growth assumption from 4.50% to 4.00% to be consistent with wage inflation assumption
  - Investment return assumption is net of investment expenses only, therefore must load contribution rate for administrative expenses.

Impact of Recommendations

	Valuation 7/1/2013	Reduced GABA Assumption Changes	Full GABA Assumption Changes
Employer Contribution Rate:			
Normal Rate	1.05%	0.41%	0.99%
Adm. Expense Load	N/A	0.29%	0.29%
UAAL	9.91%	10.26%	9.68%
Total Statutory Employer Rate	10.96%	10.96%	10.96%
Actuarial accrued liability*	$4,592,658	$4,663,316	$5,012,084
Actuarial value of assets*	$3,067,878	$3,067,878	$3,067,878
UAAL*	$1,524,780	$1,565,438	$1,944,206
Amortization Period	20	21	32

* In Thousands